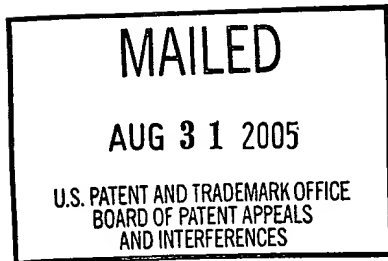


The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE



BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HON WAH CHIN

Appeal No. 2005-1701
Application 09/164,388

ON BRIEF

Before JERRY SMITH, BARRETT and DIXON, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1-43 and 45-54, which constitute all the claims pending in the application.

The disclosed invention pertains to methods and apparatus for reducing CPU overhead in the forwarding process of a network router. The invention relates to forwarding packets in a router of a network device such that per packet CPU involvement that is typically required when moving a packet from an inbound interface to an outbound interface is reduced or eliminated. This is accomplished in part by supporting simultaneous transfer of multiple packets in a queue of packets.

Representative claim 1 is reproduced as follows:

1. A method for providing an inbound controller for a router, the router having an inbound port and an outbound port, a memory, and a CPU, the inbound controller being adapted for receiving an inbound packet at the inbound port, the method comprising:

providing a plurality of inbound queues for the inbound port;

receiving an inbound packet at the inbound port;

classifying the inbound packet in a selected one of the plurality of inbound queues according to packet sorting criteria;

storing the inbound packet in the selected one of the plurality of inbound queues; and

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determining when one of the plurality of inbound queues storing a plurality of packets is ready to be moved to an entry in an outbound queue associated with the outbound port, the outbound queue being capable of storing a reference to a multiplicity of inbound queues such that a reference to each of the multiplicity of inbound queues is separately stored in a different one of a plurality of entries in the outbound queue, each of the multiplicity of inbound queues storing a plurality of packets to be separately transmitted.

The examiner relies on the following references:

Clark	5,177,480	Jan. 05, 1993
Barucchi et al. (Barucchi)	5,392,401	Feb. 21, 1995
Erimli et al. (Erimli)	6,487,212	Nov. 26, 2002
		(filed Dec. 18, 1997)

Claims 1-43 and 45-54 stand rejected under 35 U.S.C.

§ 103(a). As evidence of obviousness the examiner offers Erimli in view of Barucchi with respect to claims 1-42, and adds Clark to this combination with respect to claims 43 and 45-54.

Rather than repeat the arguments of appellant or the examiner, we make reference to the briefs and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in the claims on appeal. Accordingly, we reverse.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to

modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellant have been considered in this decision.

Arguments which appellant could have made but chose not to make in the brief have not been considered and are deemed to be waived [see 37 CFR § 41.37(c)(1)(vii)(2004)].

We consider first the rejection of claims 1-42 based on Erimli and Barucchi. The examiner essentially finds that Erimli teaches all the features of the claimed invention except that Erimli does not teach selecting one of the plurality of inbound queues according to packet sorting criteria. The examiner cites Barucchi as teaching this feature. The examiner finds that it would have been obvious to the artisan to sort the incoming packets in Erimli as taught by Barucchi [answer, pages 3-9].

With respect to independent claims 1 and 20, which stand or fall together as a single group [brief, page 4], appellant argues that the examiner's characterization of Erimli is incorrect. Specifically, appellant argues that Erimli does not teach or suggest an output queue that is capable of storing or otherwise identifying a plurality of inbound queues. Appellant asserts that Erimli does not teach transferring one of a plurality of inbound queues or determining when one of the plurality of inbound queues is ready to be moved to an outbound queue. Appellant also argues that Erimli does not teach a plurality of inbound queues for an inbound port. Appellant also

argues that the applied prior art fails to recognize the problem solved by the claimed invention [brief, pages 5-9].

The examiner responds that the claimed outbound queue stores packets rather than queues as argued by appellant. Thus, the examiner asserts that the claimed invention does not require that queues be stored in the outbound queue [answer, pages 10-11].

Appellant responds that the claimed invention recites that a plurality of packets, that is a queue, are simultaneously transferred whereas the applied prior art transfers a single packet or frame at a time. Appellant also asserts that the examiner has failed to consider the limitation that each of the multiplicity of inbound queues stores a plurality of packets to be separately transmitted [reply brief, pages 5-8].

We will not sustain the examiner's rejection of independent claims 1 and 20 or of any of the claims which depend therefrom for essentially the reasons argued by appellant in the briefs. Most importantly, we agree with appellant that claim 1 requires that queues of data, rather than individual packets, be transferred to the outbound queue. Claim 1 recites that there are a plurality of inbound queues for each inbound port. Claim 1 also recites that it is determined when an inbound queue is ready

to be moved to an outbound queue. Claim 1 also recites that the outbound queue is capable of storing references to a plurality of inbound queues. Finally, claim 1 recites that each of the inbound queues separately transmits a plurality of packets. We agree with appellant that none of these features is taught or suggested by the applied prior art. Erimli transfers data in the form of frames or packets and not in the form of a plurality of packets which have been queued in a plurality of inbound queues as claimed.

Although appellant separately argues the rejection of independent claims 10, 19, 28 and 37, these claims have similar recitations to those of claims 1 and 20 discussed above. Therefore, we do not sustain the examiner's rejection of these claims or of any of the claims which depend therefrom for the reasons discussed above with respect to claim 1.

We now consider the rejection of claims 43 and 45-54 based on Erimli, Barucchi and Clark. Independent claims 43, 53 and 54 contain recitations similar to the recitations of the independent claims considered above. Since Clark does not overcome the deficiencies of Erimli discussed above, we do not sustain the examiner's rejection of independent claims 43, 53 and

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